amplifier, which is operated in parallel with the same optical data signal, can be regenerated with a 1/0-decision element 32 by virtue of clock recovery of that kind. For that purpose the optical 1/0-data signals are preferably encoded as return-to-zero (RZ)-signals.

Figure 12 shows a 2Q-PMD-DLL with which even higher levels of sensitivity can be achieved on the basis of an IQ-PMD-receiver, in particular with PN-modulation 11.

As in the above-mentioned patent applications to the same applicant, which form the basis for this patent application, periodic PN-modulation 11 affords great advantages in terms of PMD-reception, in particular the possibility of multi-channel selectivity, multi-target detection and the highest degree of sensitivity in respect of phase transit time resolution. In accordance with the invention it is also possible to use PN-encoded data signals for data light barrier arrangements inclusive of distance measurement and for optical CDMA-data transmission, for example, as shown in Figure 12. In that respect for example a logic '1' corresponds to a normal PN-word whereas a logic '0' corresponds to the inverted PN-word = *PN*, that is to say the light/dark chips are interchanged. In contrast to Figure 11, in Figure 12 the outputs from the summing and difference amplifier 41 are both connected to the loop filter 22 which then feeds the VCM f_{chip} 44 connected to the PN-modulation generator 11. It is the difference output voltage that is formed as the difference of the quantitative differences of the photocurrents: $U_\Delta = const \cdot \cancel{(|i_a - i_b| - |i_c - i_d|)}\ \underline{(|i_a - i_b| - |i_c - i_d|)}$. By means of the recovered word clock it is possible to regenerate the data signal of the PN-encoded 1/0-data sequence by a procedure whereby in the summing amplifier the sum 45 of the differences of the photocurrents $U_\Sigma = const \cdot \cancel{(|i_a - i_b| - |i_c - i_d|)}\ \underline{(|i_a - i_b| + |i_c - i_d|)}$ is respectively formed by way of a PN-word length by means of a short-term integrator contained in the summing amplifier 41 and in the 1/0-decision element 42 the 1/0-decision is taken in clock--synchronous manner for subsequent evaluation or regeneration.

With a VCO providing a sine modulation for the modulation 11 voltage and with the circuit element 30 where T_{chip} = T/4 of the sine period, it is also possible to detect and regenerate vector modulation.

current read-out mode which keeps the accumulation gate voltage virtually constant by virtue of amplifier feedback advantageously ensures that...the accumulated charges q_a and q_b does not result in a reaction on or indeed overflowing of the potential well. **Australia page 36**.

Fig. 12 is a diagrammatic view of an apparatus according to the inventio for determining the phase and amplitude information of a light wave, for exampe for PN-modulation or rectangular modulation. **Australia page 23**.

An embodiment ... for surveying or measuring optically passive 3D-objects is shown in Fig. 12. Similarly to the embodiment involving harmonic modulation in Fig. 11 the apparatus accofing to the invention has a suitable lighting device which lights the 3D-objects 6 with light which is PN (Pseudo-Noise)-modulated in intensity and the reflected and received light is subjected to the correlation procedure ... Fig 5a shows the modulation signal $U_m(t)$, in regard to the example of a rectangular 15 bit PN-sequence. The result of the correlation by the photonic mising element is the averaged drift currents...shown in fig. 5b...the push-pull modulation photogate voltages which are applied to the modulation photogates G_{cm} and G_{dm} and which are superimposed on the bias voltaghe Uo are preferably delayed T_B with respect to the push-pull modulation photogate voltages applied to the modulation photogates Ga and Gb, that is to say $U_{cm}(t) = U_o + U_m\ (t-T_b)$ and $U_{dm}(t) = U_o - U_m\ (t-T_B)$, which results in highly advantageous amplitude and transit time measurments. **Australia page 31**.

The difference shows a steep linear configuration which permits the transit time to be determined with a high degree of resolution. The following (equation) applies for the example which is idealised here:

$$\tau = T_D = [\ T_B /2]\ - [\ (\Delta\ i_{ab} - \Delta i_{cd})\ \ / (\Delta i_{ab} - \Delta\ i_{cd})\ \ ] + [\ T_B /2\ ] \ldots$$

(Brackets and parenthesis are added for clarity)

The block diagram of a corresponding measuring apparatus for the optical measurement of 3D-objects with PN-modulation based on the proposed correlation photodectector array is characterised by a structure of particular simplicity as can be seen from Fig 12. **Australia page 32**.

Applicant leaves the reading of the remainder of the Australian parallel patent to the Examiner. However, it is clear that the structure shown and described in the Schwarte reference relied upon by the Examiner is markedly different from what the Examiner believes it to be. The structure of the Shwarte reference in its composition, its operation and the algorithm being implemented is markedly different from the present invention. Thereby, the Schwarte reference cannot be relied upon to obviate the claims 1-26 as amended herein.

It is requested that the subject application be re-examined as to the amended claims 1-24 and new claims 25 and 26 presented herein. It is urged that these claims now distinguish